REPORT

OF THE

STATE DEPARTMENT

OF

FORESTRY

Maryland
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1928/29

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FOR

FISCAL YEAR 1929

OCTOBER 1, 1928, TO SEPTEMBER 30, 1929

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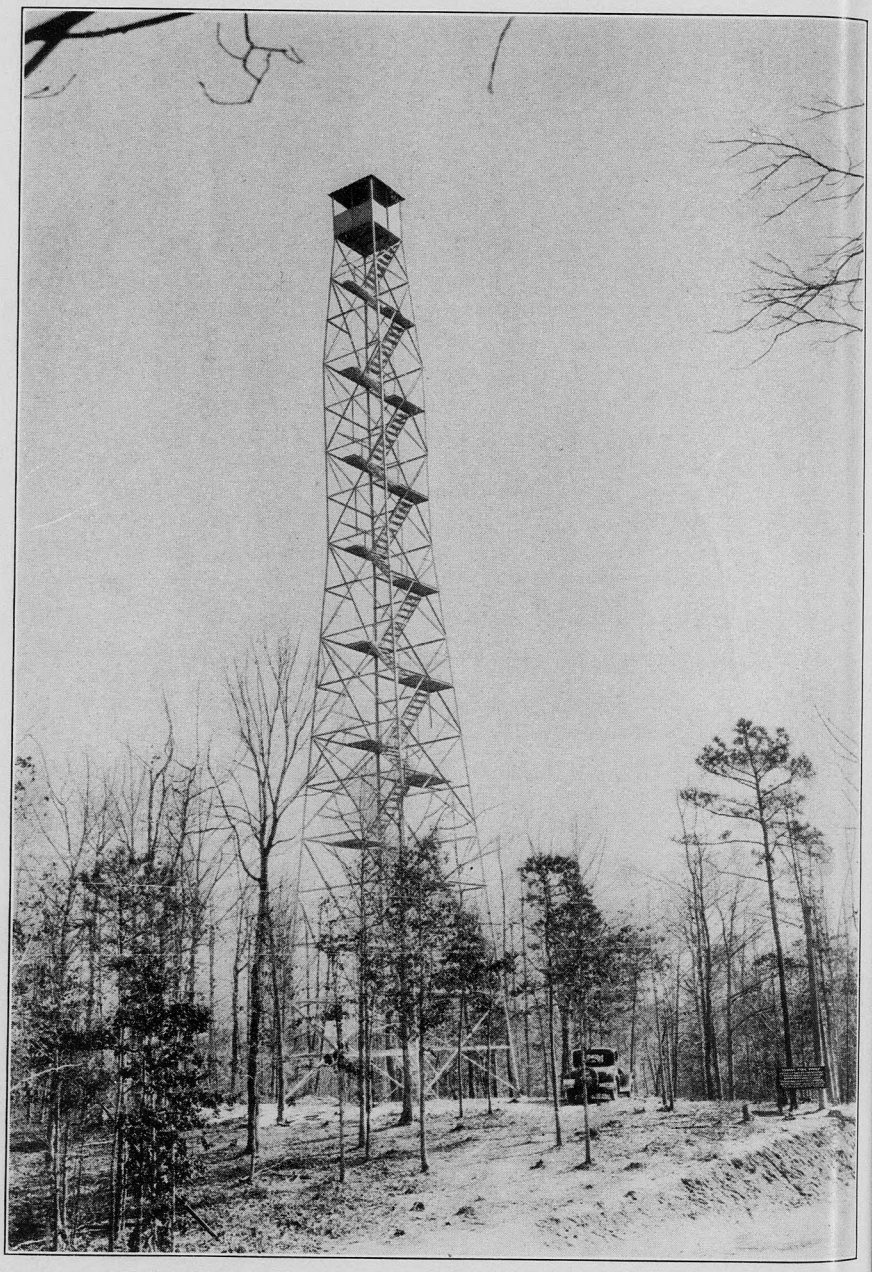

NASSAWANGO FOREST FIRE TOWER, 120 FEET HIGH. BUILT IN COOPERATION WITH LANDOWNERS OF WORCESTER AND WICOMICO COUNTIES.

INTRODUCTION

THE ORGANIC ACT OF 1906, creating the Forestry Department, charges the State Forester with the "direction of all forest interests and all matters pertaining to forestry and the forest reserves within the jurisdiction of the State." In the discharge of this responsibility the Department has organized the different branches of work to cover the whole field of forestry, and is prepared to give advice and render assistance in solving any of the forest and shade-tree problems that can be handled by a public agency.

Protecting forest lands from fire is still the biggest problem of the Department. The protection system has been materially strengthened during the year by increasing the number of Forest Wardens, erecting two, new, steel lookout towers, employing more patrolmen, and providing additional fire-fighting tools.

Woodland owners in increasing numbers have applied to the Department for help in handling their woodland problems, the requests taking many forms and involving various operations, such as thinnings, improvement cuttings, selection markings, estimating valuations, and finding markets. It has been possible to handle all requests with reasonable promptness and with satisfaction to the applicants.

One of the most noteworthy achievements during the year has been the adoption by the State of a policy of purchasing forest lands for State Forests through legislative appropriations. $50,000 was appropriated for the purpose and options are now held on three large tracts subject to final approval.

The interest in forest planting is steadily increasing. The State Forest Nursery has, for the first time since its establishment 15 years ago, been able nearly to satisfy the demand for forest planting stock. Large trees for roadside planting have been in demand and furnished in larger quantities than ever before.

The protection and care of shade and ornamental trees along the highways of the State have been carried out under the Roadside Tree Law with little friction and with even greater satisfaction.

Special investigations and studies in forest problems are conducted by one or more members of the scientific staff each summer. The past summer's work in the field consisted of examination of forest areas offered for State Forests, and a scouting of the native white pine stands in Western Maryland for the white pine blister rust—an injurious fungus disease prevalent in the northeast, and found a few miles from the Maryland line. None, however, was found in Maryland.

The educational work of the Department has been given special emphasis not only through publications and news articles but through illustrated lectures, addresses, exhibits, and demonstrations.

The year has been one of steady progress along well-established lines in meeting the forest needs of the State.

ASSISTANCE TO WOODLAND OWNERS

Forestry practice in Maryland is almost entirely a private enterprise since the State and other public agencies own but a very small percentage of the forest lands. In promoting forestry it is, therefore, important that these private owners be given every encouragement and assistance in the handling of their woodlands according to the best forestry principles. The Department, recognizing this, has for many years emphasized this feature of its work, with the result that the people of the State are looking more and more to the Forestry Department for technical guidance in handling their forestry problems. Any landowner in the State, upon application to the Forestry Department, receives free service in having his lands examined by an expert and a plan of management outlined in a written report to meet the needs of the case, as shown by the examination in conference with the owner or his agent on the ground. During the fiscal year 50 such examinations were made, comprising 13,465 acres of woodlands. These tracts were located in 18 different counties.

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The Department, however, has found by experience that the owner often requires personal service of a technical nature in addition to the advice given and the recommendations made. In order to meet this need the Department has developed a system of marking, measuring, and estimating the timber on a tract that is ready for cutting, and carries this work on to successful completion by putting the owner in touch with timber buyers, drawing up a suitable contract for the conduct of the operation, and supervising the cutting to see that the rules and regulations laid down are properly carried out. This service is rendered at a nominal cost, and, since it results in putting forestry into actual practice, it is considered one of the most effective means of promoting forestry in Maryland. The whole scheme is based on an expert analysis of the problem with a view to formulating and carrying out a plan that will not only enable the owner to realize immediate and substantial returns but leave his property in good condition for another timber crop in due course of time. During the year six operations of this kind were carried on, covering 143 acres in four different counties, each serving as a demonstration of applied practical forestry. In addition, management plans on three other tracts were formulated, in which estimates were made of the amount and value of the timber without marking the individual trees. In these cases the mature stand was rather uniform so that a selection cutting to a diameter limit promised satisfactory results.

The assistance given to woodland owners as outlined above has not only increased the area of forest land in the State brought under forestry practices and served as valuable demonstrations in the several communities but it has brought great satisfaction and commendation from the land owners thus benefited. Numerous examples are on record where individual owners have been benefited, according to their own estimates, to the amount of thousands of dollars by the service given at a nominal cost. It is believed that the value of this service each year to the landowners of the State, which is only one of several forest activities, is equal to the entire administrative budget of the Department.

It is not the purpose of the Department, in conducting the woodland work, to set up excessive values for timber but to

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rate it at a fair value, so as to give the timber operator a reasonable profit on the operation, at the same time giving the landowner, who ordinarily knows little about timber values, a fair price for his timber. At the same time the forest interests of the State are safeguarded and advanced by regulating the cutting in such a way as to insure future timber crops.

For further details of this work the reader is referred to the appendix of this report.

REFORESTATION

The trend of agriculture in the past 25 years has been toward more intensive cultivation, with larger yields per acre on a fewer number of acres, resulting in abandonment of land once cultivated. This is creating a big waste-land problem which can only be satisfactorily solved, for the most part, by reforestation.

The United States census figures show that from 1900 to 1925 there was a decrease of 538,110 acres in the improved farm acreage in Maryland, amounting to 16.6 per cent. Between 1920 and 1925 the decrease was 143,486 acres, or about 4½ per cent. The acreage in farm crops during the 5-year period, 1920-1925, decreased 454,545 acres, or a drop of over 20 per cent., while during the same period the decrease in farm acreage was less than 7 per cent. These figures show that for many years the cultivated acreage for crop production has been steadily decreasing, with a corresponding increase in non-tilled land. It is probable that some of the land withdrawn from farm acreage has gone into suburban development, parks and the like, but the decrease in existing farm acreage that is no longer used for field crops represents mainly idle land, which is reforesting naturally even though imperfectly, and which should be planted in forest. The very statement of the case opens up a large economic problem of land use that can only be solved by an extensive reforestation program.

Since practically all this idle land is capable of producing timber crops, and since the State is importing nine-tenths of

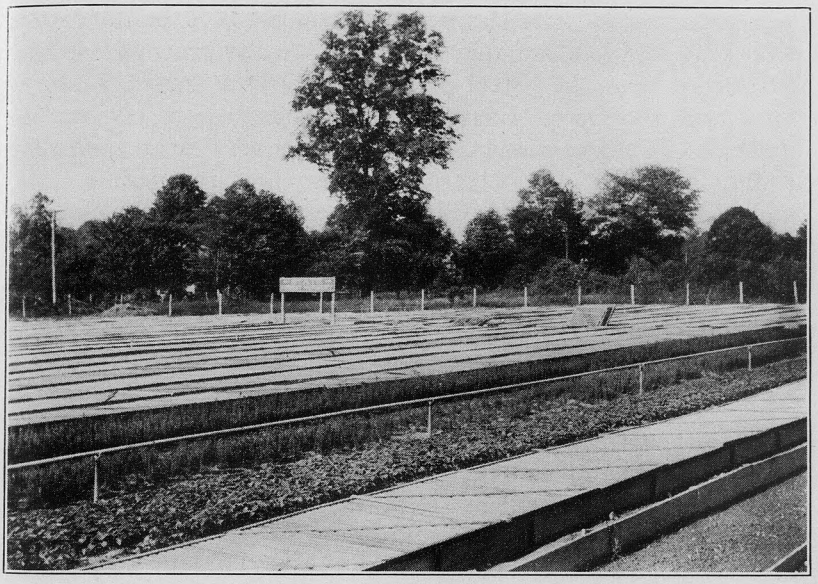

FIG. 1—PORTION OF STATE FOREST NURSERY. LATH FORMS ARE USED TO SHADE THE SMALL SEEDLINGS.

FIG. 2.—SOME OF THE THOUSANDS OF ACRES OF DENUDED LAND IN NEED OF PLANTING.

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the lumber it uses, paying an annual freight bill alone on lumber products of something like $4,000,000, it is important that this idle land be converted into timber-growing land as rapidly as possible. Most of it, especially in Southern Maryland and the lower Eastern Shore counties, is coming up naturally to pine thickets, but there is a very large area that cannot be reforested naturally within any reasonable time, and therefore forest planting is the only practicable method. It takes about 1,000 trees to plant an acre of land and since it is estimated that there are about 180,000 acres in the State in need of planting the magnitude of the problem is at once apparent.

State Forest Nursery

The Department of Forestry is giving every possible encouragement to forest planting by growing at the State Forest Nursery and distributing at actual cost suitable planting stock. The forest planting seedlings, 5 to 8 inches in height and sold from $2.50 to $5 per thousand, are generally used. On the more difficult planting sites, where larger, sturdier trees are desired, transplant stock is used at a cost of from $5 to $10 per thousand. During the year there were distributed from the State Nursery 290,000 trees for forest planting and 3,000 trees for windbreak planting. The stock available for next year is 500,000 trees for forest planting and 5,000 trees for windbreak planting.

The Department, in order to carry out the purpose of the Roadside Tree Law—to encourage the planting of trees along public highways—distributes large trees of suitable species for that purpose. These are deciduous trees, transplanted at least twice to develop compact root systems and grown to a height of from 7 to 10 feet. During the year there were distributed 6,300 trees for highway planting purposes, of which approximately 900 were furnished for specific demonstrations of double rows of planting, one-quarter mile to one mile in extent, in different parts of the State. The remainder of the trees was sold at cost to organizations and individuals for planting along public highways. The distribution of trees is limited under an agreement signed by the applicant that they shall be used only on his property for forest, windbreak, or roadside planting.

STATE FORESTS

	State Forests	Auxiliary State Forests
Garrett County:	Acres	
Skipnish	916	
Brier Ridge	996	
Herrington Manor	713	
Kindness	206	
Auxiliary State Forest		600 Acres
Piney Run	1,203	
Savage River Forest	5,023	
Washington County:		
Fort Frederick Forest	189	
Baltimore—Howard Counties:		
Patapsco Forest	1,116	
Auxiliary State Forest		1,200 Acres
Talbot County:		
Seth Demonstration Forest	65	
Totals	10,422	1,800 Acres

At the beginning of the present fiscal year the Forestry Department made a concerted effort to determine and develop the interest in the acquisition of land for State Forests. A series of leaflets was published, emphasizing the value of State Forests to the various interests and activities within the State. Such subjects as "State Forests and Industry," "State Forests and Water Conservation," "State Forests and Hunting and Fishing," and the idle-land problem, were represented in the form of separate four-page leaflets. These leaflets were widely distributed and helped materially in crystallizing sentiment for State Forests. In addition, invitations were accepted generally throughout the State to address civic bodies, service clubs, and other organizations on the subject. There was an active response, showing a deep interest on the part of all groups in extending the State Forests.

A substantial appropriation was requested for the purchase of land from the 1929 Legislature and $50,000 was appropriated to become available in 1930. It is felt that with this as a start a real beginning has been made that should eventually enable the State to acquire its goal of at least 10 per cent. of the wooded area of the State, or approximately 200,000 acres.

There are large areas of mountain land, belonging for the most part to non-resident owners, from which the timber has

been removed and the prospect for further revenue is many years in the future. The increasing tax burden and danger from fire damage have made the owners anxious to dispose of their holdings. It is land that is better adapted to timber growing than any other use and, in addition, has considerable value for watershed protection and recreation. These two uses, however, are of no tangible value to the private owner but are of great public benefit, and under State ownership can be fully utilized. This is the justification for, and indeed the responsibility of, the State in acquiring and placing under management as State Forests extensive areas of such land.

The land purchase policy of the Department is:

1. To acquire only land that is better suited to growing timber than any other use.

2. To establish purchase units in the western part of the State where 5,000 or more acres may be eventually acquired in a reasonably compact body, as this is the smallest unit capable of economical administration.

3. To acquire at least one smaller unit in each of the other three sections of the State to be operated for experimental purposes and for demonstrations of proper forestry practices.

Each one of the units is in charge of a Resident Forest Warden. Intensive systems of forest protection and management are being developed as rapidly as funds will permit.

Garrett County

The Garrett County State Forests were greatly enlarged by two purchases in 1929, one a tract of 5,023 acres of the Bond Fish and Game Preserve lying along the Savage River and extending to the top of Meadow Mountain, and the other a tract of 1,203 acres along Piney Run in the western part of the county and just north of the Skipnish State Forest.

The Swallow Falls area of 600 acres owned by the Grand Lodge of Masons of West Virginia and Pennsylvania is administered as an auxiliary State Forest by agreement. While the artificial lake created by the hydro-electric development

on Deep Creek has become the chief center of recreational activity in the county, the Swallow Falls area still holds its popularity for camping and picnic parties.

The primary object of the State Forests in Garrett County is for timber growing, but the recreational values are recognized and will be developed as an important secondary use. The lack of good roads in this territory, however, is a serious handicap to their full development.

Fort Frederick

The State Forest, situated on the banks of the Potomac River near Big Pool, Washington County, is becoming better known and is being visited by a greater number of people annually. A new State road from Big Pool to the property has made it more accessible and it is hoped that before long money will be available for the building of a road through the property to the Fort itself.

The Old Fort, which was built in 1756 from money appropriated by the Colonial Assembly, is in a fair state of preservation. It is the desire of the Department that it may be fully restored as the most important frontier defense of the pre-Revolutionary days of Maryland. As it now stands most of the walls are intact and its restoration is entirely possible at moderate expense.

An important use of the Fort Frederick property of 190 acres is for demonstrations of forest planting. There are now some 20 planting plots of ¼ to 5 acres each, on each of which a different species of forest tree has been planted in rows spaced 6 x 6 feet, for the purpose of showing what these different species will do in planted forests. Practically all of these plantations have been paid for and sponsored by different chapters of the Maryland Daughters of the American Revolution, and other patriotic organizations, thereby not only serving as a demonstration in forest planting but also as a living memorial of patriotic endeavor. The Boy Scouts of Hagerstown assisted in planting three acres in the spring of 1929.

The additions during the year were:

1 acre of arbor vitae
2 acres of loblolly pine
1 acre of red pine
1 acre of white pine
1 acre of Norway spruce
1 acre of pitch pine
½ acre of Japanese red pine
1 acre of white spruce
¼ acre of white cedar
¼ acre of cypress

Patapsco

The popularity of the Patapsco State Forest as a recreation center was further exemplified during the year by the large number of people who used it for camping. Permits are required for all who use the State Forest for camping for more than one day. These permits are given without charge and over 1,000 people availed themselves of the opportunity. For daily excursions and picnics on the State Forest no permit is necessary, and it is estimated that over 15,000 people made use of the area for this purpose.

All camp sites are marked with initial letters designating the nearest railroad station, and a number designating the site. All even-numbered camps are located on the Howard County side and all odd numbers on the Baltimore County side of the Patapsco River. Sufficient ground is allotted for a camp so that they do not encroach on each other, and the permits are for one year only, but are subject to renewal.

The Patapsco Forest is maintained as a natural park where those seeking outdoor recreation amid natural surroundings may find ideal conditions. Its nearness to Baltimore makes it available for a wide variety of uses. It is a popular place for Boy Scouts, as well as for teachers and students in nature-study classes.

Some more work was done on the River Road on the Howard County side in the late spring. This consisted of the filling in of wet places with stone, and putting in drain pipes along the road. The county furnished the pipe and trucks while the State furnished the labor.

A new picnic ground was established on the Howard County side at the junction of the Avalon and River Roads, the area cleared of vines and grass, and benches placed. The important trails were brushed out and the springs kept clean.

Seth Demonstration Forest

This tract is to be used exclusively for a demonstration forest and is located on the Ivytown Road, three miles south of Easton. The area was a gift to the State by Mrs. Mary Seth as a memorial to her husband, the late General Joseph B. Seth —a great friend of forestry.

During the year the 400-foot strip along the road has been cleared of underbrush and sprouts, and experimental plots laid out on which the stumps of trees cut were treated with different chemicals to test their effectiveness in preventing sprouting. Check plots were left for observation and comparison. The area cleared was then planted to loblolly pine in the spring.

An experimental planting of 50 small, long-leaf pines was made for the purpose of determining the adaptability of this southern species for Eastern Shore conditions.

Fire lines were cut out 10 feet wide on the northern boundary and about 5 feet wide on the southern. The greater hazard is from the north due to the close proximity of the railroad. The west end of the property borders a field and the east the road, so no lanes are needed there.

SHADE-TREE WORK

The enactment of the Roadside Tree Law in 1914 placed direct responsibility upon the Forestry Department for the protection of shade trees along the public highways throughout the State. The administration of this law naturally led into a specialization in shade-tree work.

It is estimated that there are approximately 2,000,000 shade trees along the streets and highways coming under the protection of the law. The bulk of the work has been supervising the trimming of trees along highways to give necessary

clearance to telephone, telegraph, and electric light wires. This necessitates the trimming of about 20,000 trees each year. The trimming is done by the pole-line companies, under supervision of the Tree Wardens who are under the direct control of the Forestry Department.

During the year a "Tree Wardens' Manual" was prepared and published for the information and guidance of the Tree Wardens in carrying out the tree-trimming work, which involves many details in administration and requires tact and diplomacy in meeting difficult situations.

Under the law no trees standing within the right-of-way of public highways or streets of incorporated towns may be trimmed without a permit from the Forestry Department.

To take care of the work throughout the State 58 Tree Wardens were employed, most of them part time, and all on an hourly basis. The cost of supervision of tree trimming is borne entirely by the person or corporation applying for the permit, so that this work of supervision and regulation is accomplished without cost to the State.

The Department is cooperating with towns and cities in providing, wherever desirable and practicable, a local Tree Warden to handle the work in the town, and to develop a feeling of local pride and responsibility for the care of the tree. Provision is made in the Roadside Tree Law for this, in that where a city or incorporated town appoints an officer for the specific purpose of planting and caring for trees along the streets he should be eligible for appointment as Tree Warden to carry out the provisions of the Roadside Tree Law.

The City of Baltimore for many years has had a City Forester who is given exclusive jurisdiction over shade-tree matters within the city limits. The City of Frederick has recently appointed C. Cyril Klein, formerly District Forester in the State service, as City Forester of Frederick. Since his appointment all public shade-tree work in the City of Frederick has been handled by the City Forester to the satisfaction of both the city administration and the Department of Forestry.

The growing interest in parks and shade trees within the city limits demands more and more attention and the appointment of a City Forester seems to be the proper solution of this administrative problem. Local self-government in these matters is highly desirable and, where a man with proper training can be secured and provided with a working budget, it is the most satisfactory procedure.

The Department, in addition to regulatory authority over the existing trees along the highways, has also the authority to plant trees, but as no appropriation has been made in the Department budget for the purpose, it has been possible only to carry on this work in a limited way. For several years past it has been the custom for the Forestry Department to offer a limited number of free trees for roadside planting from the State Nursery. Trees are only granted under specific conditions—where a good demonstration planting is guaranteed along a main highway and where there is sufficient interest in the community to insure the care of the trees. In the appendix of this report will be found the conditions under which trees are being distributed for this purpose. A great many applications are received from civic organizations and individuals for free trees for roadside planting. Of the large number received during the year, after conditions were examined, seven applications were granted, for which the Department furnished 587 trees. In each case not more than one mile of planting was made and in no case less than a quarter of a mile on both sides of the road, as this was considered the shortest distance practicable for demonstration purposes. The seven plantings covered a combined distance of about four miles, in widely separated sections of the State.

The Department maintains an information service on shade-tree matters and receives numerous requests for the examination of trees affected by insects or disease, as well as handles hundreds of specimens sent in each year for botanical identification or diagnosis of insect disease or trouble, and recommends treatment.

INVESTIGATIONS

Development of a maple sugar and syrup industry in Garrett County:

Over a considerable part of Garrett County the sugar maple is one of the important forest trees. It is particularly abundant around Grantsville, Bittinger, to a lesser extent, along the southeastern slope of Backbone Mountain in the southern part of the county, and along the Youghiogheny River in the northwestern part. In each of these sections for more than 100 years the trees have been tapped annually and the sap converted into syrup or sugar. The sugar season occurs usually between the middle of February and the last of March, but varies greatly due to weather conditions, the seasons varying from year to year so that it is not a certain crop.

Between 1905 and 1915, when the last of the big timber was being taken out of the Bittinger section, many of the sugar groves were cut because of the attractive prices paid for sugar-maple stumpage, and since that time, although other groves are being cut, to a smaller extent, very little is being done to establish new sugar groves. About ten years ago one of the sugar grove owners in the Bittinger section, under the advice and assistance of the Forestry Department, established a new sugar grove, 20 acres in extent, by cutting out other species of trees to release the sugar maples. Subsequent thinnings have developed a pure stand of sugar maple, with the trees spaced about 20 feet apart and now eight to ten inches in diameter. Since then there have been several other landowners who are carrying out a similar plan.

For many years buyers from northern states have come into this territory and bought large quantities of syrup and shipped it out in drums. Competition in recent years has increased the price, resulting in greater interest on the part of sugar-grove owners in maintaining and developing their properties. The chief difficulty in organizing a successful industry has been the lack of proper equipment. With the uncovered wooden bucket and crude methods of handling, it is not possible to turn out a high-grade product, but with the use of improved

utensils and modern methods, now used by some producers, it has been clearly shown that the sap-flow in Garrett County is equal in quality to that of any other section of the country, and that a high-grade product can be made. In order to demonstrate and encourage the use of modern equipment, a maple products exhibit was worked up by the Forestry Department and shown at the Garrett County Fair at Oakland in October, 1928. On one side the old method was demonstrated and on the other side of the exhibit the new method with modern equipment. This was a stimulating influence in showing the possibilities of developing a successful industry in Garrett County. Following this, and in cooperation with the Extension Service, a study was made of conditions and practices in Vermont, in order to ascertain how the industry is conducted in the best organized centers. From this study and a knowledge of conditions in Garrett County, a plan was prepared for a maple products association and submitted to a mass-meeting of the producers in Garrett County. The plan was adopted, the Garrett County Maple Products Association organized, a system of standard grades established, and inspection service provided. There is every reason to believe that this association will succeed and the Garrett County product will be sold under its own name and on its own merits, and that in a few years practically all the important producers will be in the Association. It is a good example of cooperative effort based on sound principles and it ought to place Maryland in the rank of other well-known states which have developed a maple products industry.

Non-Utilized Wood Survey:

In cooperation with the United States Department of Commerce, the Forestry Department has undertaken the survey of non-utilized wood in Maryland. This involves a canvas of the sawmills and wood-working plants to determine how much wood-waste is available at these different plants which might possibly be utilized in other plants or be the basis for establishing new plants for their utilization. The survey has not yet been completed although it is well under way and should be finished during the next year.

Land Investigations:

The examination, survey, and mapping of some 11,000 acres of land in Garrett County, which had been optioned to the State for State Forests, required the work of three field parties for two and a half months. The land, which is in two adjacent tracts, was found admirably suited for State Forests and at the very low price of $2 per acre—the option price—it will be a splendid acquisition. These areas join a 5,000-acre tract which was purchased a year before.

White Pine Blister Rust:

The white pine blister rust, a fungus disease of white pine common in New England and found to a limited extent in New York, New Jersey, and Pennsylvania, is threatening the white-pine forests in Maryland and therefore causing some anxiety to the Forestry Department. It was discovered recently in a pine plantation only a few miles from the Maryland line. However, two weeks of intensive scouting in the three counties of Western Maryland failed to reveal any trace of this disease.

Red Gum Study:

Work on this has been completed and the manuscript is ready for the printer. The bulletin will be available for distribution early in 1930.

EDUCATION

Forestry in the State can advance no more rapidly than public opinion is educated and aroused in its behalf. The Forestry Department, proceeding along this line, has offered its services freely in all lines of work dealing with forest education. The State Forester, by law, is head of the Department of Forestry in the University of Maryland, and annually delivers a course of lectures on Farm Forestry to the juniors and seniors in the Agricultural School.

The seven men on the scientific staff are available and spend a considerable part of their time in responding to calls for addresses, illustrated lectures, demonstrations, exhibits, and in the preparation of bulletins, pamphlets, *Newsletters*, and

articles on forestry subjects. The progress being made in forestry education is one of the notable advancements of the work of the past year.

During the year 120 lectures were given, of which 50 were illustrated. A detailed list is given in the appendix to this report.

Forestry Tours:

The Forestry Department, in cooperation with the Maryland Forestry Association, arranged a three-day tour of Western Maryland, October 12-14. The tour started from Baltimore with a party of 30, with Fort Frederick the first stop, although examples of roadside planting and trimming were observed on the way. The experimental plantings at Fort Frederick and the historical plantings of the D. A. R. and other patriotic organizations, as well as the Fort itself, occupied an interesting three hours. The party then went on to Green Ridge, where a detour was made in order to see the glorious fall coloring and the large wooded areas overlooking the Potomac watershed. A joint evening meeting in Cumberland with the Chamber of Commerce, in which the subject of State Forests was discussed, was the next event. The following morning the party made a stop in the vicinity of Grantsville to inspect one of the maple-sugar groves, and then went on to the Bittinger Tower at the crest of Meadow Mountain, where a view of more than 150,000 acres of forest land was obtainable. Then on to the Nicola plantations, where during the past ten years about 199,000 trees have been planted under the supervision of the Forestry Department with stock from the State Forest Nursery. After this a visit was made to Swallow Falls, Muddy Creek Falls, and the State Forests, where at Herrington Manor some 300 acres of virgin white oak timber were inspected. The party returned the next day to Baltimore by way of Kitzmiller, through West Virginia and Virginia, Harpers Ferry back into Maryland.

The Forestry Department acted as host to 56 members of the Allegheny Section of the Society of American Foresters on

a field trip, July 25, 26, and 27. This tour covered the counties of Cecil, Harford, and portions of Baltimore, in which the visiting foresters were shown plantations, pulp mills, and charcoal operations, an iron furnace with its 10,000 acres of woodland, roadside plantings, forest management under the Maryland Plan of Timber Marking, a sawmill operation on a managed tract of woodland, a water sawmill operating an up-and-down saw which has been used continuously since the time of the Revolution, and another sawmill starting as a watermill in 1840 and operated by the descendants of one family without interruption up to the present time, with a combined water and steam-mill, ending with an inspection of the forest planting at the hydro-electric plant at Conowingo and an inspection of the plant itself.

Publications:

During the year the Department published and distributed the Annual Report for 1928, a 47-page booklet; "Facts About Maryland Forests," by F. W. Besley, State Forester; a 23-page bulletin on "Forest Planting in Maryland" and an illustrated pamphlet of 12 pages, entitled "Profitable Management of the Young Forest," by F. B. Trenk, Assistant Forester; and the "Maryland Tree Wardens' Manual," a book of instructions for use by the tree wardens.

The following leaflets on State Forests were also published: "State Forests for Maryland," "State Forests and Industry," "State Forests and Water Conservation," "State Forests and Recreation," "State Forests Provide Public Hunting and Fishing."

The monthly *Newsletter* which is sent to all Forest Wardens, newspapers in the State, and others who apply for it, as well as to the Forestry Departments of other states, was issued regularly during the year.

The growing interest in forestry in the State is reflected by the newspapers in using much more material on forestry subjects than heretofore.

FOREST FIRE CONTROL

Adequate protection from the ravages of forest fires is a necessity for the practice of forestry. Recognizing the basic character of forest protection, the Department of Forestry from its organization in 1906 has considered this phase of the work as one of prime importance. The beginnings in State-wide fire control date from the first years of the Department's existence, and developments in the interim have been such that the forests of the State now enjoy a degree of protection which approaches that of adequate protection.

Forest Wardens, 625 in number and located in all portions of the State, are the basis of the fire control organization. Due to the loyalty of these non-salaried public servants, it has been possible not only to reduce greatly the size of forest fires which have started but also to improve the sentiment throughout the State to a point where the benefits of forest protection are appreciated and the forest fire regarded as a public calamity.

In the beginning no equipment was furnished the Forest Warden outside of his badge and report forms, and he was expected to use either farm tools or a forked stick in his fire fighting work. Gradually it has been found possible to purchase special fire fighting equipment for the Forest Wardens and all now receive fire rakes, a spray tank, and a back-firing torch to amplify the shovels, axes, and rakes brought by him and his men from their homes. These tools have proven very effective and by their use Wardens have been enabled to save many thousands of acres of forests.

Registered Crews:

At first the Forest Warden relied upon his neighbors and friends for all help in fire fighting. In many instances difficulty was found in assembling enough men to handle the situation adequately. Many of the men were ill-suited to the work and did not care for the job. Consequently a plan was evolved to permit the Forest Warden to build up in his community an organization for fire fighting. The organization

consisted of a body of five to twelve men, selected by the Warden, who agreed to go to any fire when called, receiving in return a higher rate of pay. The registered crew plan has developed rapidly and at the present time there are approximately 1,100 men listed as registered crew men in the State. By virtue of their direct connection with the Forest Warden the registered crew men feel a distinct responsibility for fire control within their Warden's district and for all practical purposes serve as assistant Forest Wardens, taking the initiative in fire suppression in the absence of the Warden.

District Organization:

The fire control organization is administered by one assistant Forester in the Baltimore office.

Since 1927, the State, for administrative purposes, has been divided into three districts. District I comprises the four counties of Western Maryland; District II, the remaining counties west of the Chesapeake and the Susquehanna River; while District III includes all the Eastern Shore counties.

The work of administering all activities of the fire control organization within the district comes under the direction of the District Forester. This official selects Wardens, directs men in their duties, hires and instructs lookout watchmen and other temporary employees, carries on fire prevention activities, and in all other ways develops and maintains the work of the organization. The District Foresters are assisted by District Forest Wardens who work on fire control problems on a part-time basis.

Other Employees:

The fire control organization has been much strengthened of recent years through the employment of Fire Patrolmen. These employees are located at or near a lookout tower and are immediately available for the investigation of all smokes which may be sighted from the tower. As soon as a smoke is sighted and located the patrolman leaves immediately to investigate. If the smoke appears threatening the lookout also calls the nearest Forest Warden. Very often the use of the smokechaser, as these men are commonly called,

FIG. 1.—THIS IS TYPICAL OF FOREST LANDS NOW BEING ACQUIRED FOR STATE FORESTS. VIEW OF 15,000 ACRES OF WATERSHED ON SAVAGE RIVER, GARRETT COUNTY.

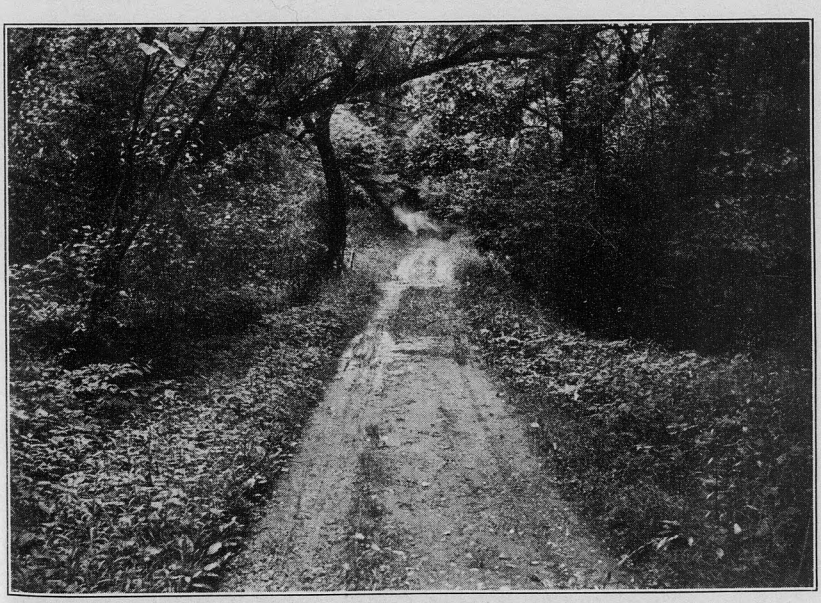

FIG. 2.—FOREST ROAD, PATAPSCO STATE FOREST.

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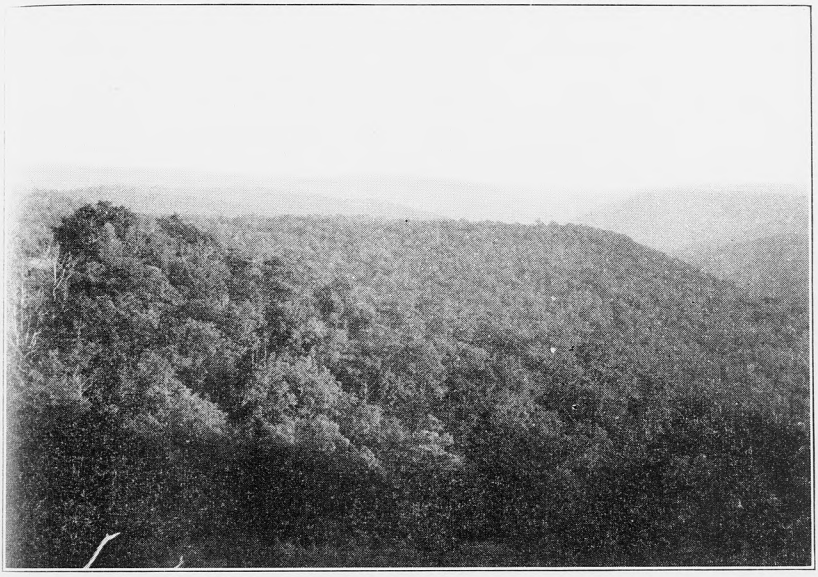

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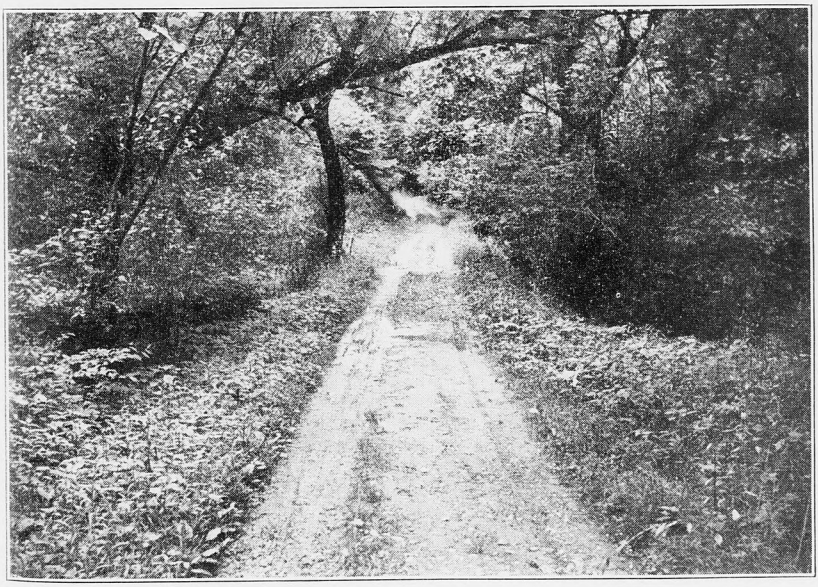


FIG. 2.—FOREST ROAD, PATAPSCO STATE FOREST.

removes the necessity of calling out the Forest Wardens to false alarms, such as controlled brush burning, thus reducing fire fighting expenses.

Because they are constantly ready to leave at a moment's notice, the smokechasers get to fires quickly and are often enabled to suppress them single-handed, or with a small amount of help. Fighting fire day after day, these men become especially adept at this difficult job, learning through experience the precise action necessary to bring the fire under control with the least amount of work. The reduction of the size of the average fire in the State during the past few years is partially due to the activities of these employees.

Fire Patrolmen are continually checking up on brush-burning operations and other hazardous conditions within their districts. In this way they warn those intending to clear land of the danger involved and the necessity of using extreme care.

Twelve Patrolmen were employed during the year 1929.

A ranger is employed in the Catoctin-South Mountain district of Frederick County. This section has an exceptionally high incendiary hazard. The ranger patrols the mountain roads and trails during the fire seasons, interviewing farmers, posting signs, visiting schools, and in other ways striving to prevent this class of fires.

Lookout Towers:

The first steel forest fire lookout tower in the State was erected on Meadow Mountain in Garrett County in 1915. Towers have been gradually added at the rate of approximately one each year, until, in 1929, 14 of these structures were in service in the State. All of the towers are constructed of steel with an inside wooden stairway leading to a glass enclosed room at the top. The towers vary in height from 50 to 120 feet, with the exception of the one at Dan's Rock which is approximately 15 feet in height.

The lookout towers form the eyes of the forest fire control organization. They are located at points of advantage where the greatest amount of woodland can be surveyed. Ordinarily a tower will cover an area of about 10 miles radius or about

200,000 acres. In clear weather the lookout watchman can quickly detect any fire which starts within this large area, and can report it by telephone to the Forest Warden responsible for the suppression of the fire. In this way it is possible to systematize forest fire fighting and send the Forest Warden to the fire while it is still small.

Of the towers now in operation, eight are located in Western Maryland, four on the Western Shore, and two on the Eastern Shore. The detection plans of the State call for the construction of at least 10 more towers in order to cover effectively all sections having a large proportion of timberland.

Several important developments in the fire detection plan of the State were made in 1929. The most noteworthy, perhaps, was the erection, early in that year, of the Nassawango Forest Fire Tower in Worcester County in the loblolly pine section of the Eastern Shore. This tower is 120 feet in height, the highest tower built for fire detection purposes in the United States, so far as is known. The terrain overlooked by the tower is exceptionally flat and the extra height was needed to reach over the tree tops and to obtain the best vision. Aid in building the tower was rendered by the timberland owners who formed the Nassawango Forestry Association, assessing each member a small sum for each acre of woodland owned. The County Commissioners of both counties also contributed to the erection of this tower.

In April, 1929, a 15-foot tower was erected on Dan's Rock in Allegany County. Previous to the erection of the tower a lookout had been stationed at the Rock for five or more years. While the view from the Rock itself is sufficiently broad to justify maintaining a station at this point, the fact that the lookout had no station to protect him from the weather, and was required to climb up and down the rough sides of the peak in order to telephone, made the arrangement rather unsatisfactory. The new tower is similar to other forest fire lookout towers used in the State, except for its height. The house has greatly increased the efficiency of reporting fires from this station.

Early in June, 1929, the Thayerville tower in Garrett County, erected in 1921, was moved a quarter of a mile southeast of

its old location. The new location gives a much wider view and makes it possible to report fires in regions hitherto unseen.

In September, 1929, a new tower was completed in eastern Harford County. The tower is located on Fair Hill, about five miles due west from Aberdeen. The Coastal Plane region of Harford County has long been a region of frequent and damaging forest fires. The new tower was built primarily to aid in the control of fires in this region of high hazard. Cooperation was received in constructing this tower from the County Commissioners of Harford County, who contributed $300 toward the cost. Mr. Jesse A. Evans, of Aberdeen, contributed the site on which the tower is built.

Wardens' Conferences:

During the year five Wardens' conferences were held. On March 2 the first Wardens' conference for Calvert County was held at North Beach, followed one week later by one at Upper Marlboro on March 9. The Frederick County conference was held on March 20, and a conference of Washington County Wardens was held at Hagerstown on March 21. The final conference of the year was held in Garrett County on March 22 and 23. All conferences were well attended by the Forest Wardens of the respective territories. The conferences serve as training schools where the newer Wardens are instructed in the rudiments of forest fire control work. Interesting discussions are also held on different phases of the activities. Speakers from the U. S. Forest Service, local organizations, and the Forestry Department address the Wardens. No conferences were held on the Eastern Shore during the past year, due to the change in personnel making it impossible to complete arrangements at the proper time.

Warden Signs:

During the year the Department of Forestry purchased a sufficient number of enamel signs, bearing the phrase, "Forest Warden, Report Forest Fires Here," to supply one to each Forest Warden in the State. These signs are distributed to the Forest Warden and are erected by him at or near the entrance to his home. These signs were purchased primarily to satisfy a

need for advertising the presence of the Wardens to better advantage. In regions where fires are less common a Warden may serve for several years without being generally known throughout the community, unless some means is taken to advertise his office. These attractive signs in green and white, measuring 10 x 15 inches, have proven very popular with the Forest Wardens and their use has increased the knowledge of the services of the Department throughout the State.

Cooperation

The theory under which the Department of Forestry carries on fire control activities assumes that the owner of forest land has a responsibility, equal with that of the State, for its protection. Consequently efforts are made to encourage landowners to participate actively in the protection of their holdings. In this way the Department of Forestry is in cooperation with many agencies in carrying out fire control activities.

Federal Government:

Under the Clarke-McNary Law of 1924 the United States Forest Service participates in the protection of forest lands. Under this law Maryland receives annually an appropriation from the Federal Government to be used for fire prevention purposes. This appropriation amounted to $7,210 for the fiscal year ending June 30, 1929. For the fiscal year beginning July 1, 1929, the appropriation was $9,929. Federal allotments have been steadily increasing since the passage of the law and have been a welcome and important contribution to the State's appropriation. In Maryland it has been the practice to expend these funds mainly for equipment, towers, and fire-fighting tools, although some funds are used for other purposes. The District Forest Inspector of the U. S. Forest Service for this district makes periodic inspections of the work of the organization.

Frederick City:

The Department of Forestry and the City of Frederick maintain close cooperation in the protection of the forest lands in the Catoctin-South Mountain area. The city owns approximately 6,000 acres of forest land in a region of very

high hazard within this section. During the past few years the city has constructed a forest fire lookout tower which has been maintained by the Forestry Department for the better protection of this area. The city has also constructed a smoke-chaser's cabin near the central portion of the watershed, where a man is stationed during the fire season. Under advice of the Department, the city has also undertaken the construction of a number of fire lines throughout the area to make it more accessible for fire fighting purposes. During the past year the City of Frederick employed C. Cyril Klein, a former member of this Department, in the capacity of City Forester. By a cooperative arrangement Mr. Klein receives a portion of his salary from the Department of Forestry for his work as Assistant District Forester in the Catoctin-South Mountain region.

Nassawango Forestry Association:

The Nassawango Forestry Association was organized through the agency of the District Forester on the Eastern Shore during 1927 and 1928. This Association, composed of the principal woodland owners of Worcester and Wicomico Counties, constructed the Nassawango forest fire lookout tower in this area during the fall of 1928. The services of the lookout tower have proved invaluable in the one season during which it has been in operation.

Harford County:

During the past year Harford County contributed $300 toward the construction of the Fair Hill forest fire lookout tower. Inasmuch as all counties in the State bear one-half of the costs of fire fighting within their county, they are directly interested, also, in developing fire control methods. This tower cost approximately $1,500.

Other States:

The states of West Virginia and Pennsylvania cooperate with the Department of Forestry in maintaining lookout towers near the State border. Snaggy Mountain tower on the western boundary of the State is maintained cooperatively by Maryland and West Virginia. Dan's Rock tower in Maryland

supplies detection service for portions of West Virginia. The West Virginia forest fire station on Pinnacle Rock overlooks a large area in southeastern Garrett County, and supplies for this area detection service for the Maryland organization. Quirauk tower in Washington County, owned by the Western Maryland Railway Company, is used jointly by the states of Pennsylvania and Maryland for detection purposes.

During the past year, conferences have been held with both West Virginia and Pennsylvania authorities to increase the cooperation near the boundary line. As a result, it is hoped that two new towers, to cover portions of Washington and Allegany Counties, will be erected shortly.

Industries:

Several industrial plants in Western Maryland have effectively aided the Department in fire suppression. One of the perplexing problems of fire control work is to find sufficient labor to control very difficult fires which are periodic in their occurrence. Since 1927, efforts have been made to interest large industrial organizations in Western Maryland in aiding the Department in this line of the work. The response has been praiseworthy. In the City of Frederick three such emergency crew organizations are now available. Employees of the Ox Fibre Brush Company and the Frederick Iron Works have each organized forest protection squads. That these men are fire fighters in fact as well as in name was well evidenced in the very serious fire which occurred on the Catoctin Mountain in September, 1929, when crews from these organizations carried on most effective forest fire control work. Another crew in the City of Frederick is formed by the members of the Izaak Walton League. Each crew has, at its head, a Forest Warden appointed by the Department of Forestry. The men are equipped with fire fighting tools and are available at any time upon short notice. The Kelly Springfield Tire Company of Cumberland and the Potomac Edison Company of the same place have also cooperated with the Department in this line of work.

Other Agencies:

The Chesapeake & Potomac Telephone Company carries a list of Forest Wardens on the back page of each telephone

directory published in the State. This has proven a great aid in the reporting of forest fires. The Department cooperates with approximately 40 volunteer fire companies scattered throughout the State. Each fire company has a Forest Warden appointed for the company, who leads in fire suppression. The number of volunteer fire companies cooperating with the Department is rapidly increasing.

All State Policemen are commissioned as Forest Wardens and have served effectively in reporting forest fires and in law enforcement work.

The State Game Department has cooperated in fire control work through the posting of fire warning notices and in printing fire warnings on all hunting licenses. All Game Department employees are instructed as to the location of Forest Wardens and are requested to report forest fires promptly.

Fire Prevention

Fire Signs:

New fire signs, illustrated by a cut in the appendix to this report, were designed for use on the roadside sign backs during the past year. This policy of erecting backs at two-mile intervals along the roadways, adopted in 1926, has been carried steadily forward until, at the present time, about 300 miles of improved mileage of State roads have been covered.

Railroad Fire Hazards:

The railroad fire hazard law of 1924 requires all railroads to clear annually, between October 1 and April 15, a 100-foot strip along their rights-of-way wherever the Department of Forestry has determined that a hazard exists. The Department of Forestry, under the law, obtains permission from the property owners for the clearing of the safety strip. In the event the permission is refused, the law requires that the landowner shall clear the safety strip at his own expense. The permissions are turned over to the railroads in the late summer of each year, and the railroad is notified of the necessity

of clearing the safety strips prior to April 15. As a matter of practice the Department requests all railroads to clear safety strips prior to March 15, inasmuch as experience has shown that unless fire hazards are clear prior to this date the efficiency of the work is very low, a great many fires occurring from March 1 to April 15. During the past year the adherence to the fire hazard law has been, in general, very praiseworthy. In some sections there has been difficulty in obtaining punctual and worth-while clearing.

Railroad fires increased somewhat in number during the past year, 93, or 16 per cent. of all fires, being listed as of that cause. Railroad fires burned over 3,152 acres, or 18 per cent. of the total area. The damage amounted to $21,356, or 28 per cent. of the total damage.

Law Enforcement:

During the past year 149 forest fire claims were presented for payment to persons responsible for the fires. Of this number 22 claims have subsequently been dropped. Of the remaining 127 claims, 56 have been paid, amounting to $513.53. During the year 21 claims were collected for fires started prior to the fiscal year 1929, amounting to $235.10. The total amount collected for fire suppression during the year amounted to $738.63. This represents about one-tenth of the total amount of money spent for fire suppression.

Lectures and Exhibits:

During the year 120 lectures were given. In every lecture an appeal is made to the audience for better forest fire prevention. In this manner the Department builds up gradually, year after year, an increasing consciousness of the necessity of fire prevention in the effort to reconstruct the forests of the State.

One forest fire prevention exhibit was held during the year at the Frederick County Fair.

Publications:

During the past year the Department published a circular on brush burning. Brush burning is one of the largest causes of fires and their number is apparently on the increase. Fires under this classification are usually caused through carelessness and ignorance. The circular attempts to give some of the primary fire prevention rules for clearing land. It has proven very popular and the original printing has been exhausted.

Also during the year the "Forest Fire Evil", a circular on the fire problem in general, was revised and reprinted.

Other Activities:

The 625 Forest Wardens of the Department of Forestry, located in all the communities of the State, serve as one of the most important fire prevention agencies. Active Forest Wardens are constantly warning their neighbors, and calling the attention of the members of their communities to the importance of fire prevention. Likewise, the salaried members of the organization, from the District Foresters to the Fire Patrolmen, are constantly engaged in fire prevention activities by visits to schools and by personal contacts.

Forest Fires

The statistics on forest fires for the calendar year 1929 will be found in the tables following this report. Spring fires totaled 440, burning over 13,762 acres. During the same period in 1928, an unusually bad year, 536 fires were reported, burning 28,037 acres. The spring season was characterized by many early fires. In the southern and central portions of the State the fire season reached its peak about March 15. Serious fire conditions continued until April 15, when the undergrowth of the forest had sufficiently developed to reduce the hazard. In Western Maryland the peak of the fire season came somewhat later, as usual, occurring in the first 10 days of April. Fires in this region continued in fairly large numbers until May 20. The larger number of fires reported from the Eastern

Shore occurred in the latter part of March, and the first part of April. An unusually large number of fires—five—were reported from this district in the first 10-day period of June, when the fire season is usually considered as over.

Unusual conditions of drought occurred during late August, bringing on an unseasonal number of fires in early September. The most serious of all fires occurring during this period was one on the Catoctin Mountain, during the first days of September. This fire was of incendiary origin, and was set in several places on the Sunday preceding Labor Day. The unusually dry condition of the forest floor soon resulted in a serious fire which burned for three days over an area of approximately 1,500 acres. This was the most serious fire of the year. The fall fire season, thereafter, was mild in its intensity, with slight danger except for a short period in late October. A total of 146 fires was reported for the fall of 1929, with a total acreage burned of 4,164 acres and a damage of $20,714.

All fires for the calendar year 1929 totaled 586 in number, burning 17,926 acres, with an estimated damage of $75,860. The costs of forest fire suppression amounted to $7,342. These figures offer interesting comparisons with past records. In the number of fires the 1929 statistics are exceeded only by the year previous, when 634 fires were reported. This is not to be taken entirely as an indication of greatly increased fire hazard throughout the State, but rather as an increase in reporting efficiency. The past records, and even the present, do not show all the fires starting within the State, but the figures for late years more clearly represent the situation because of the emphasis which has been placed on better reporting.

In area burned, the 1929 figures are lower than those of any other year since 1920, with the exception of 1927, an unusual year, when the total area burned was 4,200 acres. The size of the average fire, 31 acres, was lower than that of any other year, with the exception of 1927. The estimated damage was low as compared to 1925, 1926, and 1928.

On the whole, the fire records show a satisfactory situation with improvement noted in our attack on the problem. If the trend in reduced acreage indicated in the past few years can be continued it would appear that a uniformly successful forest fire situation is approaching.

In the classification of fire according to causes, "brush burning" leads with 154 fires, or 26 per cent. Smoking is next with 128 fires, or 22 per cent., followed by incendiary fires, causing 94, or 16 per cent. of the total. Railroads were responsible for 93 fires, or 16 per cent. of the total. Fires in the unknown class totaled 73, or 12 per cent. Miscellaneous accounted for 23 fires, while lumbering was responsible for 11, and campers 10. Only one fire was reported as caused by lightning.

The Department of Forestry has for its objective in forest fire control the reduction of the forest area burned over to one-tenth of one per cent. of the total forest area of the State. Of the 17,927 acres burned in 1929, only 8,807 acres are classified as forest land, representing 39 one-hundredths of one per cent. of the total forest area. To reach the desired objective, therefore, it will be necessary to reduce the area burned over to about one-fourth of the figure of last year.

Divided according to area classes the fires were as follows:

Less than ¼ acre	26
From ¼ to 10 acres	356
From 10 to 100 acres	176
From 100 to 1,000 acres	26
Over 1,000 acres	2
Total	586

Prince Georges County had by far the largest number of fires of any county, with 154 reported. Garrett with 86, Anne Arundel with 72, and Allegany with 60, followed in the order listed.

TABLE I—FOREST FIRES BY SEASONS IN THE COUNTIES

January 1 to December 31, 1929.

County	Spring, 1929				Fall, 1929			
	No.	Acreage	Damage	Expense	No.	Acreage	Damage	Expense
Allegany	44	2,251 1/4	$2,795.90	$671.78	16	221 3/4	$671.75	$195.45
Anne Arundel	66	2,013 1/4	3,421.92	576.43	6	132	357.70	5.00
Baltimore	11	217	469.05	38.35	3	7 1/2	100.00	19.35
Calvert	6	27 1/2	147.50	70.90	..	.....	.....	.....
Carroll	..	.....	.....	.....	2	6	650.00	35.50
Caroline	..	.....	.....	.....	5	158 1/2	460.00	10.65
Cecil	14	226	622.60	112.80	7	88	85.00	95.10
Charles	5	131 1/4	256.75	26.85	2	12 1/2	56.00	30.95
Dorchester	4	177 1/4	780.00	11.00	6	947	8,695.25	217.60
Frederick	7	295 1/2	2,664.50	213.56	6	1,547	3,087.00	792.92
Garrett	75	3,076 1/2	5,737.25	824.43	11	183 1/2	244.00	92.25
Harford	1	7	10.50	1.75	2	1	.....	3.35
Howard	9	271 1/2	593.75	83.45	4	12	2.35	1.00
Kent	1	20	20.00	18.45	1	10	5.00	11.20
Montgomery	30	940 1/8	9,991.85	316.35	6	7 3/4	70.00	56.50
Prince Georges	116	1,664 1/4	17,656.90	1,240.49	38	285	2,524.92	480.40
St. Marys	5	129	1,109.10	43.95	3	121	701.00	30.90
Somerset	8	208	1,925.00	77.35	9	205 3/4	1,115.50	55.00
Talbot	4	20 3/4	44.75	35.80	5	19 5/8	109.50	61.29
Washington	18	1,634 1/2	3,400.75	360.25	2	2 1/4	5.00	16.30
Wicomico	6	31 1/2	1,285.00	27.10	5	29	179.00	28.45
Worcester	10	420 1/2	2,213.00	59.35	7	167	1,595.00	100.85
Total	440	13,762 5/8	$55,146.07	$4,810.39	146	4,164 1/8	$20,713.97	$2,340.01
False Alarms	22	.....	.....	133.55	14	.....	.....	58.05
	462	.....	.....	$4,943.94	160	.....	.....	$2,398.06

TABLE II—FOREST FIRES BY COUNTIES

January 1 to December 31, 1929

County	No.	Acreage	Damage	Expense
Allegany	60	2,473	$3,467.65	$867.23
Anne Arundel	72	2,145¼	3,779.62	581.43
Baltimore	14	224½	569.05	57.70
Calvert	6	27½	147.50	70.90
Caroline	5	158½	460.00	10.65
Carroll	2	6	650.00	35.50
Cecil	21	314	707.60	207.90
Charles	7	143¾	312.75	57.80
Dorchester	10	1,124¼	9,475.25	228.60
Frederick	13	1,842½	5,751.50	1,006.48
Garrett	86	3,260	5,981.25	916.68
Harford	3	8	10.50	5.10
Howard	13	283½	596.10	84.45
Kent	2	30	25.00	29.65
Montgomery	36	947⅞	10,061.85	372.85
Prince Georges	154	1,949¼	20,181.82	1,720.89
St. Marys	8	250	1,810.10	74.85
Somerset	17	413¾	3,040.50	132.35
Talbot	9	40⅜	154.25	97.09
Washington	20	1,636¾	3,405.75	376.55
Wicomico	11	60½	1,464.00	55.55
Worcester	17	587½	3,808.00	160.20
Total	586	17,926¾	$75,860.04	$7,150.40
False Alarms	36	.....	.....	191.60
	622	.....	.....	$7,342.00

TABLE III—CAUSES OF FOREST FIRES BY COUNTIES

January 1 to December 31, 1929

County	Lightning	R. R.	Campers	Smoking	Brush Burn'g	Incendiary	Lumbering	Misc.	Unknown	Total	False Alarm
Allegany	..	14	..	13	13	10	1	5	4	60	10
Anne Arundel	..	3	..	24	19	12	..	2	12	72	1
Baltimore	..	1	..	4	6	1	..	..	2	14	..
Calvert	..	..	..	1	3	..	..	..	2	6	..
Caroline	..	1	..	..	3	..	..	..	1	5	..
Carroll	..	..	..	1	..	..	..	1	..	2	..
Cecil	..	6	..	5	3	..	..	..	7	21	..
Charles	..	2	..	1	3	1	..	..	..	7	..
Dorchester	..	..	..	5	3	..	1	..	1	10	..
Frederick	..	..	..	2	3	7	..	..	1	13	1
Garrett	..	11	4	15	8	36	2	4	6	86	13
Harford	..	1	1	1	..	..	..	..	..	3	..
Howard	..	3	..	1	5	..	..	..	4	13	..
Kent	..	..	..	..	1	..	..	..	1	2	..
Montgomery	..	5	..	4	16	4	1	3	3	36	..
Prince Georges	..	41	2	31	46	17	2	4	11	154	2
St. Marys	..	..	1	3	4	..	..	..	..	8	..
Somerset	..	..	1	3	8	..	2	..	3	17	..
Talbot	..	..	..	3	2	1	..	3	..	9	1
Washington	1	2	..	4	2	4	..	..	7	20	5
Wicomico	..	3	..	1	2	1	..	..	4	11	..
Worcester	..	..	..	6	4	..	2	1	4	17	3
Total	1	93	9	128	154	94	11	23	73	586	36
Per Cent	..	16	2	22	26	16	2	4	12	100	..

TABLE IV—DAMAGE OF FOREST FIRES BY CAUSES

January 1 to December 31, 1929

Cause	No.	Per Ct.	Area	Per Ct.	Damage	Per Ct.
Lightning	1	..	¼	..	$5.00	..
Railroad	93	16	3,152⅛	18	21,356.10	28
Campers	9	2	522½	3	1,882.27	3
Smoking	128	22	3,175	18	14,062.10	18
Brush burning	154	26	4,405¼	24	10,786.40	14
Incendiary	94	16	3,338	19	10,894.32	15
Lumbering	11	2	721¾	4	3,767.75	5
Miscellaneous	23	4	726⅞	4	2,950.60	4
Unknown	73	12	1,885	10	10,155.50	13
Total	586	100	17,926¾	100	$75,860.04	100
False Alarms	36					
Total	622					

TABLE V—NUMBER AND PERCENTAGE OF FIRES BY DISTRICTS

January 1 to December 31, 1929

	No.	Per Cent
District I—Western Maryland—Allegany, Washington, Frederick, Garrett	179	30
District II—Western Shore—Anne Arundel, Baltimore, Calvert, Carroll, Charles, Harford, Howard, Montgomery, Prince Georges, St. Marys	315	54
District III—Eastern Shore—Caroline, Cecil, Dorchester, Kent, Somerset, Talbot, Wicomico, Worcester	92	16
	586	100

FINANCIAL STATEMENT

1929

Balance, October 1, 1928		$1,871.31
Receipts (October 1, 1928, to September 30, 1929):		
State Treasurer	$60,722.96	
Woodlot work (travel)	145.57	
Reimbursement (fire expenses)	1,299.04	
Other sources	2,544.01	
Payment of damage claims	10.00	
Clarke-McNary Refund	10,239.66	
	$74,961.24	
Interest, F. & M. National Bank	59.60	75,020.84
		$76,892.15
Bills paid State Comptroller		1,099.85
		$77,992.00
Expenditures (October 1, 1928, to September 30, 1929):		
Salaries and wages	$42,731.93	
Repairs to motor vehicles	300.00	
Traveling	1,787.50	
Freight and express	77.51	
Postage	1,141.37	
Office supplies	760.42	
Printing	1,628.60	
Motor supplies	750.00	
Office equipment	400.00	
Field equipment	300.00	
Rent	2,000.00	
Insurance	19.45	
Travel—District Foresters	3,648.43	
Rent—District Foresters	521.56	
Office supplies	199.81	
Telephone—District Foresters	125.55	
Telephone—Towermen	282.76	
Fire-fighting tools	4,908.17	
Travel—Smoke Chasers	1,200.00	
Repairs to buildings—Garrett	50.00	
Repairs to buildings—Patapsco	50.00	
Repairs to buildings—Ft. Frederick	50.00	
Seeds and trees	765.25	
Miscellaneous income	13,804.75	$77,503.06
Bank balance, September 30, 1929		$488.94

APPENDIX

WOODLAND EXAMINATIONS

Date 1928	Name	Address	Location	Acres
Oct. 2	Winchester, F.	Snow Hill, R.F. D.	Snow Hill	100
" 8	Comly, S.	Kennedyville	Near Locust Grove	10
" 9	Hill, J. G.	Stockton	Stockton	75
" 14	Sparklin, D. W.	Federalsburg	Federalsburg	20
" 27	Richards, G. W.	Goldsboro	3 miles from Goldsboro	11
" 31	Yates, W. B.	Centreville	Starr	60
Nov. 9	Cardwell, F. R.	Mauch Chunk, Pa.	Elk Neck	105
" 16	Parsons, George	Marion	Marion	85
" 27	Pleasants, Henry	Phila., Pa.	Near Rocks	165
Dec. 4	Long, Ellis B.	Centreville	Centreville	80
" 5	Henry, R. G.	Easton	Myrtle Grove	213
" 18	Cronhardt, M. A.	Lutherville	Near Cronhardt	35
1929				
Jan. 4	Boswell, Perry	Mt. Rainier	Near Hill Station	112
" 16	Parker, Mrs. L. W.	Mardela	Near Mardela Springs	4
" 24	Cooke, Francis	Baltimore	Near Atholton	100
" 28	Scarborough, L. G.	Street	Whiteford	101
Feb. 1	Balderston, Lloyd	Colora	South of Colora	55
" 1	Lippincott, J. E.	Colora	Colora	14
" 1	Glackin, H. L.	Rising Sun	South of Rising Sun	14
" 4	Stewart, M. M.	Baltimore	Chestertown	25
" 4	Morris, James	Chestertown	Chestertown	30
" 4	Carver, E. H.	Chestertown	Hopewell Corner	60
" 4	Tolchester Estate	Tolchester	Tolchester	40
" 5	Lane, B. H.	Queenstown	Near Queenstown	16
" 5	Gale, G. A.	Queenstown	Near Queenstown	30
" 5	Greaves, W. H.	Wye Mills	Wye Mills	16
Mar. 12 and 13	U. S. Government	Perry Point	Perry Point Reservation	40
Mar. 21	Green, Wilbur	Bittinger	Near Bittinger	100
"	Manor Min. & Mfg. Co.	Baltimore	Backbone Mountain	10,000
April 2	Town of Federalsburg	Federalsburg	Federalsburg	12
" 27	Kerins, George	Oakland	Near Oakland	40
May 3	Stewart, M. M.	Baltimore	Near Millersville	100
" 17	Illmer, G. M.	Lutherville	Near Leslie	40
" 23	White, D. W.	Route 2, Princess Anne	Mt. Vernon	30
" 23	Pollitt, Joseph	Eden	Eden-Princess Anne Road	290
" 24	Leake, Richard	Route 3, Snow Hill	Near Snow Hill	30
" 24	Truitt, B. T.	Snow Hill	Snow Hill	20
" 28	White, Thomas, Jr.	R. D. 2, Salisbury	1½ miles S. E. Siloam Church	100
" 28	Simonds, Dr. E. B.	Riverdale	½ mile E. of Edmonston and Branchville Roads	65
" 31	Vandergrift, Dr.	Snow Hill	Near Snow Hill	70
"	South Cumberland Rod and Gun Club	Cumberland	Near Mouth of Town Creek	142

WOODLAND EXAMINATIONS—Continued

Date 1928	Name	Address	Location	Acres
June 1	Shaw & Donnelly		Near Bryantown	75
" 4	Frederick City	Frederick	Frederick City Watershed	50
" 11	Parsons, C. R.	Route 2, Snow Hill	Near Snow Hill	40
" 14 and 25	Zantzinger, R. C.		Near Oxon Hill	250
June 18	Jackson, E. H., and Mrs. Crain		Near Fort Washington	250
" 19	Layfield, P. O.	Manokin	Manokin	60
" 25	Cox, Miss Esther	Baltimore	Near Union Bridge	50
Sept. 24	Harrison, O. N.	Tilghman	Near Tilghman	5
" 24	Harrison, O. N.	Tilghman	Tilghman Island	30

SUMMARY

County	Number	Acres
Allegany	1	142
Anne Arundel	1	100
Baltimore	1	35
Caroline	3	43
Carroll	1	50
Cecil	6	268
Charles	1	75
Frederick	1	50
Garrett	3	10,140
Harford	2	266
Howard	1	100
Kent	5	165
Prince Georges	4	677
Queen Annes	4	186
Somerset	4	465
Talbot	4	264
Wicomico	2	104
Worcester	6	335
Total number of examinations	50	Total acres 13,465

MARKINGS

Date 1929	Name	Address	Location	Acres
Feb. 4	Boswell, Perry	Mt. Rainier	Near Hill Station	25
" 14	Cronhardt, M. A.	Lutherville	Near Cronhardt	35
Mar. 13	U. S. Government	Perry Point	Perry Point Reservation	3
" 13 and 21	Carroll, Mrs. M. C.	Ellicott City	Near Elioak	20
Mar. 13 and 21	Carroll, Mrs. M. C.	Ellicott City	Near Elioak	20
May 22 and 23	Illmer, G. M.	Lutherville	Near Leslie	40

SUMMARY

County	Number	Acres
Baltimore	1	35
Cecil	2	43
Howard	2	40
Prince Georges	1	25
Total	6	143

ESTIMATES

Date 1928	Name	Address	Location	Acres
Dec. 18	Carroll, Vivian	Cambridge	Cambridge	12
1929				
May 9-10	Detrick, Dr. F. L.	Ruxton	Bet. Ridgeville and New Market	50
Aug. 12-29	Manor Min. & Mfg. Co.	Baltimore	Backbone Mountain	1,900

SUMMARY

County	Number	Acres
Frederick	1	50
Dorchester	1	12
Garrett	1	1,900
Total number of estimates	3	Total acres 1,962

PLANTING PLANS

Date 1928	Name	Address	Location	Acres
Oct. 8	Hill, J. G.	Stockton	Stockton	25
" 14	Sparklin, D. W.	Federalsburg	Federalsburg	20
" 30	Wickes, Mrs. L. W.	Chestertown	Near Locust Grove	5
Nov. 7	Kemp, Joseph J.	Welcome	Welcome	20
" 27	Pleasants, Henry	Phila. Pa.	Near Rocks	100
Dec. 6	Hill, William	Washington	Near Brookeville	8
" 19	Hubbard, W. T.	East New M'k't	East New Market	70
1929				
Jan. 4	Boswell, Perry	Mt. Rainier	Near Hill Station	3
Feb. 1	Glackin, H. L.	Rising Sun	Near Rising Sun	1
" 2	Lloyd, S. C.	Wilmington, Del.	Near Betterton	....
Mar. 25	Dinsmore, T. M. Co.	Baltimore	Near Bradshaw	200
May 3	Bennett, Jesse Lee	Arnold	Near Arnold	15
	South Cumberland Rod and Gun Club	Cumberland	Near mouth of Town Creek	6
June 1	Shaw & Donnolly		Near Bryantown	12
" 19	Corbin, A. O.	Crisfield	Near Crisfield	6
" 20	Parsons, G. S.	R.F.D., Salisbury	Mt. Hermon	5
" 25	Alexander, Paul	Norwood, Pa.	Town Point	30
Sept. 24	Harrison, O. N.	Tilghman	Near Tilghman	5

SUMMARY

County	Number	Acres
Allegany	1	6
Anne Arundel	1	15
Baltimore	1	200
Caroline	1	20
Cecil	1	1
Charles	2	32
Dorchester	2	100
Harford	1	100
Kent	2	5
Montgomery	1	8
Prince Georges	1	3
Somerset	1	6
Talbot	1	5
Wicomico	1	5
Worcester	1	25
Total number of planting plans	18	Total acres 531

LECTURES

*Illustrated. †Extension Department.

Date		Location	Under Auspices
1928			
Oct.	1	Cumberland	Directors, Chamber of Commerce
"	5	Mardela Springs	*Mardela Springs Fair
"	5	Frederick	Directors, Chamber of Commerce
"	5	Kensington	*Kensington Woman's Club
"	8	Hancock	Chamber of Commerce
"	9	Cumberland	Rotary Club
"	10	Cumberland	Monarch Club
"	10	Cumberland	Allegany Fish & Game Protective Association
"	18	Baltimore	*Gwynns Falls Junior High School
"	18	Earleigh Heights	Earleigh Heights Volunteer Fire Department
"	19	Oakland	Rotary Club
"	19	Cockeysville	*Parent-Teachers Association
"	20	Upper Marlboro	Western Shore Tower Employees
"	26	Frostburg	Consolidation Coal Company Mining School
"	30	Taneytown	*Parent-Teachers Association
Nov.	12	Cedarcroft	Cedarcroft Garden Club
"	13	Hagerstown	*Boy Scouts Training Course
"	13	Princess Anne	†*Extension Service
"	19	Farm Bureau	†Merrills
"	22	Brandywine	Brandywine Woman's Club
"	23	Forest Park, Baltimore	Forest Park High School
"	26	Kensington	*Kensington Woman's Community Club
Dec.	4	Charlotte Hall	Charlotte Hall School
"	8	Seat Pleasant	Seat Pleasant Volunteer Fire Department
"	7	Churchville	Churchville Grange
"	18	Darlington	League of Women Voters
1929			
Jan.	7	Aberdeen	Aberdeen Volunteer Fire Department
"	8	West Annapolis	West Annapolis Fire and Improvement Co.
"	8	Mt. Colliers Church	*Forest Warden
"	8	Twiggtown	Twiggtown School
"	8	Warrior Mount	Warrior Mount School
"	8	Baltimore	Izaak Walton League (Broadcasting)
"	9	Irons Mount	Irons Mount School
"	9	Rohrers School	*Forest Warden
"	10	Oldtown	Oldtown School
"	10	Oldtown	*Oldtown School
"	11	Flintstone	*Flintstone School
"	11	Flintstone	Flintstone School
"	15	West Annapolis	West Annapolis Fire and Imp. Company
"	15	Frederick	Kiwanis Club
"	16	Bel Air	*Rotary Club
"	17	Baltimore	*Parent-Teachers Asso., School No. 20
"	18	Baltimore	*Scout Troop 86
"	22	Marbury	Marbury Primary School
"	22	Marbury	Marbury White Grammar School
"	22	Marbury	Marbury Colored School
"	23	Dodge	Dodge School
"	23	Flat Woods	Flat Woods School
"	23	State Line	State Line School
"	23	Negro Mountain	Negro Mountain School
"	23	Keysers Ridge	Keysers Ridge School
"	23	Indian Head	High School
"	23	Glymont	Glymont White Grammar School
"	23	Glymont	Glymont Colored Grammar School
"	24	Swann Meadow	Swann Meadow School

LECTURES—Continued

Date 1929		Location	Under Auspices
Jan.	24	Sunnyside	Sunnyside School
"	24	Red House	Red House School
"	24	Gauer	Gauer School
"	24	Kempton	*Kempton Grammar School
"	24	Kempton	*Kempton High School
"	25	Oakland	*Oakland High School
Feb.	4	Yellow Springs	*Forest Warden
"	5	Catoctin Furnace	*William Benner
"	6	Wolfsville	*Forest Warden
"	7	Highlands	*Forest Warden
"	15	T. B.	*County Agents' Woodland Marking Contest
"	18	Annapolis	Annapolis Independent Fire Company
"	20	Salisbury	†*Extension Service
"	21	Baltimore	*Gwynns Falls Junior High School
"	21	Powellsville	*District Forester
"	22	Long Ridge	*District Forester
"	22	Trappe	†High School
"	22	Easton	†*Extension Service
"	23	Snow Hill	*Nassawango Forest Protective Association
"	25	Eastport	Eastport Volunteer Fire Company
Mar.	2	North Beach	*Meeting of Forest Wardens
"	6	Bradbury Heights	*Parent-Teachers Association
"	8	Battery Park	*Battery Park Garden Club
"	9	Upper Marlboro	*Meeting of Forest Wardens
"	12	Annapolis	Annapolis Rescue Hose Company
"	12	Perry Point	*Parent-Teachers Association
"	13	Perry Point	Perry Point School
"	14	Baltimore	*D. A. R. Conference
"	19	Baltimore	Izaak Walton League (Broadcasting)
"	19	Baltimore	*Maryland Forestry Association Meeting
"	20	Baltimore	*Santa Maria Coun'l 1733, Knights of Columbus
April	1	Riverdale Heights	Riverdale Heights Volunteer Fire Deptartment
"	2	Mt. Washington, Balto.	*Parent-Teachers Association, Bare Hills School
"	3	Baltimore	*Twentieth Century Club
"	3	Timonium	*Ridge School
"	10	Upperco	*Patrons Club, Trenton School
"	12	Towson	State Normal Elementary School
"	12	Relay	Relay School
"	15	Cockeysville	Cockeysville Volunteer Fire Department
"	19	Hamilton, Baltimore	Garrett Heights School
"	19	Sparks	†*Sparks High School
"	24	Bagley	Chimney Corner Club and School
"	26	Baltimore	*May Company
"	26	Hyattsville	Prince Georges County Vol. Firemen's Asso.
"	27	Fort Frederick	Daughters of the American Revolution
May	5	Port Deposit	†9th District Farmers Club
"	8	Catonsville	Catonsville High School
"	8	Bowie	Prince Georges County Vol. Firemen's Asso.
"	10	Rockville	Rockville Garden Club
"	14	Beltsville	†*Beltsville Grange
"	16	Frederick	†*Frederick High School
"	16	Frederick	†*Frederick High School
"	23	Havre de Grace	*Fellowship Club
"	28	College Park	Class in Engineering Materials, U. of Md.
June	1	Camp Linstead, Severna Park	*Scout Masters Training Course
"	5	Near Port Deposit	†9th District Farmers Club
"	5	Bradbury Heights	*Bradbury H'ghts Parent-Teachers Association
"	12	Belair Road	*Brotherhood of St. Peters Church

LECTURES—Continued

Date 1929	Location	Under Auspices
" 17	Glenn Dale	Glenn Dale Fire Association
" 24	Camp Morriss	Boy Scouts
" 24	Oxon Hill	Oxon Hill Citizens Association
Sept. 19	Lanham	Lanham Citizens Association
" 20	Cumberland	Boy Scout Council
" 24	Cumberland	Old Town Road School
" 30	Laurel	Laurel Volunteer Fire Company

PUBLICATIONS

Leaflets

* 1 Practical Assistance to Owners of Woodlands.
* 2 Maryland Fire Laws and Fire Prevention.
* 3 Forest Laws of Maryland.
* 4 Instructions to Forest Wardens.
* 5 Woodlot Forestry for Maryland Farmers.
* 6 Marketing the Forest Crop.
* 7 Maryland's Forest Resources.
* 8 Forest Resources and Forest Conditions of Prince Georges County, Maryland.
* 9 Forests and Forest Management in Kent County, Maryland.
*10 Forests and Forest Management in Harford County, Maryland.
*11 Work of the State Board of Forestry for 1909.
*12 Demonstration Forests.
*13 Working Plan of Woodland.
14 Forest Exhibits for Schools.
15 General Forestry Laws.
*16 Roadside Tree Law.
*17 Instructions for Tree Planting.
18 Plan of Cooperation Between Woodland Owner and the State Forester.
*19 Fire Wood to Relieve the Coal Shortage.
20 Patapsco Forest Reserve.
21 The Forest Fire Evil.
22 Lectures and Lecturers.
*23 Forest Wardens.
24 Forest Planting.
25 Black Walnut.
26 White Ash.
27 Red Oak.
28 Tulip Poplar.
29 Black Locust.
30 Shortleaf Pine.
31 White Pine.
32 Loblolly Pine.
33 Camping on the State Forests in Western Maryland.

*Not available for distribution.

LIBRARY, UNIVERSITY OF MARYLAND

34 Instructions for Proper Planting.
35 Camping at Fort Frederick State Forest.
36 Forestry Exhibits
37 State Forests for Maryland.
38 State Forests and Industry.
39 State Forests and Water Conservation.
40 State Forests and Recreation.
41 State Forests Provide Public Hunting and Fishing.
42 Idle Land and Busy Trees.
43 It Pays to be Careful.

Map of Maryland showing Forested Area.

Bulletins

*Report of the State Board of Forestry, 1906-1907.
Report of the State Board of Forestry, 1908-1909.
*Report of the State Board of Forestry, 1910-1911.
Report of the State Board of Forestry, 1912-1913.
*Report of the State Board of Forestry, 1914-1915.
Report of the State Board of Forestry, 1916-1917.
Report of the State Board of Forestry, 1918-1919.
Report of the State Board of Forestry, 1920-1921.
Report of the State Department of Forestry, 1922-1923.
Report of the State Department of Forestry, 1924-1925.
*Report of the State Department of Forestry, 1926.
Report of the State Department of Forestry, 1927.
Report of the State Department of Forestry, 1928.
*Forests of Allegany County.
*Forests of Anne Arundel County.
Forests of Baltimore County.
Forests of Frederick County.
*Forests of Garrett County.
Forests of Kent County.
*Forests of Prince Georges County.
Forests of Washington County.
*Increasing the Durability of Fence Posts.
*Wood-Using Industries of Maryland—First Edition.
Forests of Maryland.
Maryland Forest Fire Manual.
Wood-Using Industries of Maryland—Second Edition.
*Forest Reserves of Maryland.
Basket Willow Culture in Maryland.
Loblolly Pine in Maryland.
Windbreaks and Shelter Belts for Maryland.
Facts About Maryland Forests.
Forest Planting in Maryland.
Profitable Management for the Young Forest.
Maryland Tree Warden's Manual.

*Not available for distribution.

CONDITIONS GOVERNING FREE TREE DISTRIBUTION FOR ROADSIDE PLANTING

1—Only white ash, green ash, oriental plane, tulip poplar, honey locust, sweet gum, and cypress are available for distribution.

2—Trees will not be furnished for less than one-quarter mile of planting on both sides of the road nor for more than one mile of such planting.

3—All trees must be planted within the public right-of-way and far enough from the edge of the paved highway to meet road requirements.

4—The consent of abutting property owners must be secured where planting is considered.

5—The spacing of trees on each side of the road to be not less than 40 feet apart for cypress, and not less than 60 feet apart for plane, tulip poplar, honey locust, sweet gum, white ash, and green ash,—a wider spacing is preferable.

6—Trees are furnished free at the College Park Nursery. The applicant must pay the transportation charges from the nursery to the place of planting, furnish the labor for planting the trees, provide suitable guard stakes, and give assurance that the trees will be properly cared for after planting.

7—The Forestry Department will, upon acceptance of the above conditions, examine the location where planting is proposed, to determine whether planting is practicable and if so what species of trees is best adapted for the location and the preparation of a planting plan with estimate of cost. It will also furnish a man to supervise the planting.

Applications will be filed in the order received and trees furnished to the first applicants who can comply with the conditions where it is found planting is most practicable.

Application for Trees

I

We have read the above conditions carefully and do hereby apply for trees for public planting with the belief that these provisions can be fully carried out, and assure you of our intentions to do so.

Signed.....
Title or Name of Organization.

Address .....

FILL THESE OUT—IMPORTANT

Distance along the road to be planted..... mile

Kind of trees desired.....

Width of right-of-way.....feet.

Width of paved roadway.....feet.

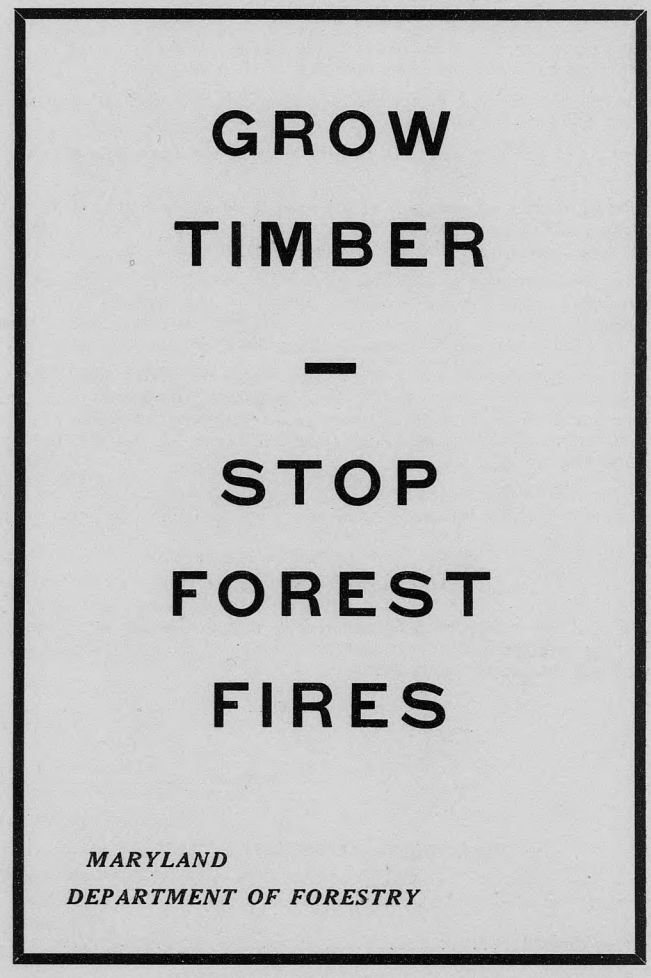
Exact location to be planted in.....

Near.....

Direction and distance therefrom.....

Name of abutting property owners on each side of road.....

.....



FOREST FIRE SIGNS, 1929

OTHER SLOGANS:

THINK OF TOMORROW—STOP FOREST FIRES

PROTECT GAME—STOP FOREST FIRES

COLORS—Letters white; left background red; right background blue.